

Claims

1. Round baler, including a wrapping device for wrapping a bale (33) with a net or any other similar wrapping means (3), comprising: a chamber (34) for the formation of a bale (33), which is bounded at least in part by rollers (36, 37; 55, 56), two of which (36, 37), consisting of a feed roller (36) and another roller (37), define a gap  
5 (38) used for feeding the wrapping means (3) into said chamber (34); a storage means (4) of the wrapping means (3); a dispensing device (1) of the wrapping means (3), which is movable between at least a first position, corresponding to a rest position, and a second position for gripping and feeding said wrapping means (3) inside said chamber (34); actuation means (23) for actuating said dispensing device  
10 (1); a cutting device (5), which is movable between a first position, corresponding to a rest position, and a second position, or cutting position; characterised in that said dispensing device (1) has first and second ends, and a set of rollers (26, 27; 26', 27', 42; 26'', 27'', 42'') is mounted on said second end, which is used to grip a loose element (3'') of the net; wherein, in said second position of the dispensing device (1),  
15 the loose end of the net (3'') is in contact with the feed roller (36) on the outer side of the latter, with respect to the chamber (34).

2. Round baler according to claim 1, wherein the contact between the net (3) and the surface of the feed roller (36), occurs at a point which is shifted with respect to the  
20 gap (38).

3. Round baler according to claim 1 or 2, wherein said feed roller (36) has ribs (40) in order to facilitate the gripping action on the loose end (3'') and its feeding towards the gap (38), and therefore its insertion into the chamber (34).

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4. Round baler according claim 3, wherein at least one roller (26; 26'; 26''; 27'; 42;

27", 42") of said group of rollers of the dispensing device (1), presents spiral ribs of opposite directions, that is left-hand and right-hand, which are apt to outstretch the net during the wrapping of the bale.

5 5. Round baler according to anyone of the preceding claims, wherein at least one roller (26'; 26"), making part of said group of rollers of the dispensing device (1), is motorised.

6. Round baler according to anyone of the preceding claims, wherein there are  
10 provided means (29; 44) which are suited to push one against the other at least two rollers (26, 27; 26', 27'; 42, 26') of said set of rollers of the dispensing device (1).

7. Round baler according to anyone of the preceding claims, wherein an element (39) is provided on the dispensing device (1), which together with the loose or free end of  
15 the net (3"), abuts on the feed roller (36).

8. Round baler according to anyone of the preceding claims, wherein the said dispensing device (1) is formed by a rocker lever (1), which is connected at its first end, corresponding to the upper end, to the frame of the round baler, and is provided  
20 on this upper end with a plurality of transmission elements (2, 25, 24) , and at least one (2) of these elements is idly mounted in order to perform the task of a net-length measuring roller (2) with the aid of a respective sensor.

9. Round baler according to claim 8, wherein the arrangement of said transmission  
25 elements (2, 25, 24) on the upper end of the rocker lever (1) is such as to insure, when the rocker lever (1) is in the second position and in the exact instant when it arrives in this position, the presence of a section of the net (41) which is slack.

10. Round baler according to claim 8, wherein also the net-length counting roller (2) has spiral ribs, in order to be capable of laterally outstretching the net which is partially wound around its surface.

5 11. Round baler according to anyone of the preceding claims, wherein an element (31) is provided on the dispensing device (1) in order to protect and guide the loose end (3") of the net towards the insertion gap (38).

12. Round baler according to claim 1, wherein said cutting device (5) is actuated by  
10 linkages or tie rods (7) that connect the same to said dispensing device (1).

13. Round baler according to claim 12, wherein a hooking-unhooking mechanism (9, 10, 13) is provided for said cutting device.

15 14. Round baler according to anyone of the preceding claims, wherein a brake (16) is provided which, in the first position of the dispensing device (1) is in contact with the wrapping means (3) on the storage means (4), while it withdraws from said wrapping means (3) during the initial period of the wrapping step, when said dispensing device (1) is in said second position.

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15. Round baler according to claim 14, wherein said dispensing device (1) may also occupy a third position, which is determined by a sensor and is located between said first and second positions, and in which the cutting device (5) is still in said first position whilst the brake is again in touch with the wrapping means (3) on the  
25 storage means (4).

16. Round baler according to claim 15, wherein the brake (16) is urged by elastic means to return to its position in touch with the wrapping means (3) on the storage

means (4), and is actuated by tie rods (19) which connect the same to the dispensing device (1).

17. A method for wrapping a bale, using a wrapping device of a round baler, the  
5 method including the following steps:
- providing a stock, or supply 3, of wrapping means, on a respective storage means (4) mounted on the round baler;
  - providing a dispensing device (1) for said wrapping means (3), said dispensing device being movable between a first, or rest position, and a second or gripping  
10 position of the wrapping means (3), wherein the dispensing device (1) comprises a plurality of transmission elements (2, 24, 25) of said wrapping means (3), and a set of gripping rollers (26, 27; 26', 27', 42; 26'', 27'', 42'') for gripping said wrapping means;
  - guiding said wrapping means (3) from said storage means (4), around said  
15 transmission elements (2, 24, 25) and up to said gripping rollers (26, 27; 26', 27', 42; 26'', 27'', 42''), while letting a loose or free end (3'') of the wrapping means (3) project from the latter rollers;
  - displacing said dispensing device (1) from said first position to said second position, by the use of actuation means (23); wherein, in the second position of the  
20 dispensing device (1) said loose end (3'') is forced to engage or contact a first roller (36) of said chamber (34), that defines an insertion gap (38) in combination with a second roller (37) of the same chamber, and is used to insert the wrapping means (3) into the chamber (34);
  - waiting until said loose end (3'') is transported by said first roller (36) of the  
25 chamber, along a path extending around an outer portion of the roller's circumference, up to said insertion gap (38), and into the chamber (34);
  - a wrapping step, in which the wrapping means (3) is drafted and wound around the bale (33) within the baling chamber (34) of the round baler;

- a cutting step, in which the wrapping means (3) is cut by a cutting device (5), after said dispensing device (1) has returned to its first position under the control of said actuation means (23).

5 18. A method according to claim 17, wherein the wrapping means (3) is outstretched in the transversal direction under the effect of at least one spiral-ribs-carrying-roller comprised in the group of gripping rollers (26, 27; 26', 27', 42; 26'', 27'', 42'').

19. A method according to claim 18, wherein in order to facilitate the operation of  
10 transporting the wrapping means (3) towards the insertion gap (38), along said outer portion of the circumference of the first roller (36) of the baling chamber, a slack portion or non-tensioned portion (41) of the wrapping means (3) is generated during the displacement of the dispensing device (1) from the first position to the second position, and said first roller (36) of the baling chamber (34) takes advantage of this  
15 slack portion in order to draft the free end (3'') towards the insertion gap (38) by overcoming a reduced or even negligible resistance.

20. A method according to claim 19, wherein said wrapping means (3) is also outstretched in the transversal direction by means of a net-length counting roller (2)  
20 carrying spiral ribs and included in said plurality of transmission elements (2, 24, 25).

21. A method according to anyone of claims 17 - 20, wherein at least one roller of the group of gripping rollers (26, 27; 26', 27', 42; 26'', 27'', 42'') is motorised in  
25 order to increase the length of the free end (3'') of the wrapping means (3), during the displacement of the dispensing device (1) from said first position to said second position.

22. A method according to anyone of claims 17 – 21, wherein a brake (16) is provided, which abuts on the supply (3) of wrapping means (3) when said dispensing device (1) is in the first position, in order to tension or outstretch said wrapping means (3), but which is no more in touch with said supply (3) of the wrapping means  
5 when said dispensing device (1) reaches said second position.

23. A method according to anyone of the preceding claims 20-22, wherein, immediately after the wrapping means (3) has traversed the insertion gap (38) and begins to the wound around the lateral cylindrical surface of the bale (33), a sensor  
10 associated to said net length counting roller (2) transmits a control signal to an electronic control unit, which in turn controls the actuation means (23) of the dispensing device (1), so that the latter is brought to a third position, corresponding to an operative or working position, intermediate between said first position and said second position.

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24. A method according to anyone of the claims 17 to 23, wherein said cutting device (5) and said brake (16) are at least in part actuated by linkages (7, 19) which connect them to said dispensing device (1).

20 25. A method according to anyone of claims 17 – 24, wherein the dispensing device is a rocker lever (1) comprising two arms (1, 1) pivoted to the frame (47) of the round baler.

26. A method according to claim 25, wherein said net length counting roller (2) is  
25 coaxial with the rotational axis of the rocker lever (1).

27. A method according to anyone of the claims 17-21, wherein a brake (16) is provided, which uninterruptedly abuts on the wrapping material supply (3).

28. A method according to claim 18, wherein the spiral ribs of the spiralled rollers may also be obtained without adding material, but simply by removing material from the rollers themselves.